Valentine Complex Fire Rehabilitation Plan

(Watts Fire)

10/24/00

Prepared By

ROS Mark Lindvall and FMO Tim J. Klukas

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I. Background

The Valentine Complex was triggered by a dry lightning storm that started over fifty fires in Cherry County, Nebraska on September 17, 2000. Over 100,000 acres burned in a two day period. The Valentine Complex was controlled at 22,366.2 acres. No lives , livestock, or structures were lost. Resource damage occurred on private and Valentine National Wildlife Refuge lands. Wildlife habitat, feed, roads, windmills, trees and fences were damaged on the Refuge. Private holdings had damage to grazing lands, hay bales, trees, windrows, fences and roads. Several fires grew together to form the Pony, 28C, Tower, Watts, and Dads fires (Attachment A.). These fires were managed by a Type III incident management team. The fires cost an estimated $200,000. The fires were contained on September 28th, and declared out on October 2, 2000. The purpose of this plan is to identify rehabilitation measures needed, how to implement the plan, and to identify the funding needs required to put the plan in action.

A. Characteristics and General Description

1. Location and Size- The Refuge is located in the Sandhills of North Central Nebraska. The Valentine Refuge Complex fires were predominantly contained on the Refuge located approximately 25 miles south of Valentine, NE. The total acreage of the Valentine NWR is 71,516 acres. Within that area lies 61,861 acres of grassland, so at least 29.5% of the grasslands burned, 18,292.0 acres (Table 1.).

FIRE NAME	FEDERAL ACRES	PRIVATE ACRES	STATE ACRES	**TOTAL ACRES**
Watts	**949.2**	**101.8**	**0**	**1,051.0**
Dads	**12,385.1**	**1,486.6**	**31.4**	**13,903.1**
Pony	**3,492.1**	**1,459.8**	**0**	**4,951.9**
Tower	**716.2**	**90.1**	**0**	**806.3**
28C	**749.4**	**904.5**	**0**	**1,653.9**
TOTAL	**18,292.0**	**4,042.8**	**31.4**	**22,366.2**

Table 1. Valentine Complex Acreage by Ownership, M. Beasley Display Processor

2. Soils- The soil surveys indicate the soil base in the area is made of wind laid sands. The Valentine (fine sand, undulating), Valentine-Rosebud (loamy fine sands, undulating) and Dune Sand (stabilized, rolling). The soils have little organic matter, and a fine texture. The soils in the hills and choppy breaks have the least amount of organic matter, while the soils in the basins, valleys and meadowlands have thicker and darker suface layers. Figure 1 demonstrates this difference by showing the lowland areas still having

concentrations of dark ash while the hills have almost no cover and organic layer remaining. All of these soil types are vulnerable to wind erosion. The lighter and finer soils in the hills, choppies, and ridges lost at least 80% of the ground cover (Figure 2 and personal obs.). The ground cover in the lowlands lost 50 to 75% of the ground cover (personal observation). The area was experiencing an extended drought from July through September. The soil moisture was low and the ground cover consumption reflected this factor.

3. Topography- The Sandhills are massive dunes with large valleys lying between ridges and choppy hills. These Sandhills vary in slope from 10 to 100% and range in elevation from 2,800 ft. to 3,100 ft. The valleys and canyons are bordered by gentle slopes or choppy hills and filled with lowland sites that form lakes or subirrigated meadows (Figure 3 and Figure 1).

4. The climatic pattern of the Nebraska Sandhills are characteristic of the Central Great Plains: highly variable climate characterized by cold winters and hot summers with frequent thunderstorms occurring from spring to late summer. Temperatures range from - 38*F to 111*F in the summer. Annual precipitation averages 21 inches on the Refuge. Sixty five percent of the precipitation comes during the May to September growing season. This period of moisture has the most impact in the region. During the year, the precipitation levels in July, August and September fell three inches below normal with record high temperatures being set. Winds in the 5-15 mph range are common throughout the year. The wind erosion potential on these sites is constant as demonstrated in Figure 2. The region has experienced winters over the last two years that have been unusually warm and dry. The occurrence of open winters will leave the area vulnerable to wind erosion without snow cover. The lack of soil moisture from the drought will affect the recovery of the vegetation and landscape.

5. Vegetation Prior to Fire- Sandhill Prairie is within the wide transitional zone of the Mixed Grass Prairie between Tall Grass Prairie and the Short Grass Plains. The precipitation is typical of the semiarid Mixed Grass Prairie; however the Nebraska Sandhills is characterized by a predominance of post climax tallgrass species typical of a greater moisture regime. This mixture and general dominance by Tallgrass Prairie species is locally influenced by topography (i.e., the soil moisture holding capabilities and soil moisture holding capacities and soil moisture penetration in different textures of the sand soil range sites and the root structures and the photosynthetic strategies of cool and warm season plants). Four basic range sites are located in the Sandhills, wetland range, sub-irrigated range, sand range, and choppy range sites. The federally threatened fringed orchid is found withing the wetland range site, and the federally endangered blowout penstemon is found in the choppy range sites. The exotic species such as Kentucky blue grass, smooth brome and red top invade the sub-irrigated range sites and some of the sand range sites. The range sites are a mixture of Short Grass to Tall Grass Prairie species. The woodlands are a mix of native and introduced woody species. Most of the nonnative

species were introduced during the CCC era. The exotic woodland component and range site component is partially managed with prescribed fire.

6. Intensity of the Fire- The fire occurred at the peak of the summer fire season. The vegetation was cured in most areas to carry a fire. The lowlands had below normal water levels, so this habitat that is more fire resistant was also available. The fire spread averaged from 3 to 5 miles a day. The flame lengths ranged from 1 to 30 feet. The intensity varied depending upon the fuel loading and direction of spread. Backing fires in heavier fuel concentrations consumed vegetation down to the basal portions. Head fires in upland sites consumed at least 75% of the litter layer and burned grass clumps down to the growth points. All fire activity was intensified by preheating of the ground fuels. Prior to ignition ambient temperatures were in the 95*F range and the relative humidities ranged from the teens to the thirties. The fire was active and running in the 30% range and did not slow down until the relative humidities almost reached 40%. The multiple ignitions and overall acreage consumed under a wide humidity range indicate the fire intensity was extremely high during the fire runs. Figures 1, 2 and 3 demonstrate the consumption of fuels on the upland sites was higher than in the lowlands. The wind erosion is visible three days after ignition.

7. Hydrology- The Refuge has thirty seven major wetland complexes totalling approximately 13,000 acres. The Sandhills are part of the Valentine Formation which is deposited unevenly over Rosebud Formations. The uneven deposits intersect portions of the Ogallala Aquifer. The Aquifer creates an interspersion of shallow lakes, semipermanent, and temporary wetlands in the lower elevations and valleys where the groundwater is exposed. The water sources support the ecological diversity and integrity of the Nebraska Sandhills. The wetlands on the Refuge are a mix of shallow lakes, marshes, seasonal wetlands, wet meadows, fens and small streams. The drought mentioned earlier affected all of these wetlands and in some areas the meadows, fen and streams were dried up. The lakes are freshwater and not brackish. Refuge wetlands normally function as a closed system and only during periods of excess precipitation does excess surface water exit. Runoff into the water bodies is not projected to be a problem. The soils are more subject to wind erosion than water erosion. The soils readily absorb moisture and are stabilized by precipitation due to their fine sandy composition.

8. Land Ownership involved- The breakdown on land ownership involved is displayed in Attachment B. Eighteen percent of the land involved is privately owned. Less than one percent of the Nebraska Game and Parks Commission land was involved. The remaining eighty two percent of burned areas were on Federal USFWS lands. Some fires were ignited on Federal lands and other fires were ignited on private lands. All the land involved was in Cherry County, Nebraska. Several neighbors were impacted by the Complex fires and other fires outside of the Refuge. Some permittees had winter grazing allotments impacted by the fires. The permittees are from neighboring or nearby ranches.

B. Resource Uses

The Refuge was established by Congress in 1935 as a breeding ground for migratory birds and other wildlife. The refuge is home to 270 species of birds, 59 species of mammals, and 22 species of reptiles and amphibians. Several threatened and endangered plants, birds, and one insect are found on the Refuge. The waterfowl and upland bird habitat have been managed with a combination of grazing, resting and prescribed fire to produce diverse populations of flora and fauna. The wildlife on the Refuge lost winter cover and feed.

The public use has been mostly limited to recreational opportunities centered around wildlife/wildlands observation and education, as well as hunting and fishing. Public use during the time of the burn was mostly upland bird hunting and bird watching. The permittees within the Refuge are allotted grazing units to manage the grasslands. Cattle are used for the grazing. Some landowners had winter grazing allotments that were burned. The leases were not active at the time of the burns but were anticipated to be used for winter or spring grazing. The burns covered areas that are normally hunted in the fall and winter for deer, pheasants, waterfowl, prairie chickens, grouse, and coyotes.

II. Evaluation and Analysis

A. Damage to Physical Factors

Nearly all above ground vegetation was burned during the fires, especially in the hills. The sandy soils are now vulnerable to erosion, especially wind caused erosion. As this fire occurred after the growing season, the soil will remain exposed throughout the winter. Wind caused erosion is already evident and will continue throughout the winter, especially if we have an open winter with little snow and high winds.

B. Damage to Facilities

The fires burned through 25.1 miles of boundary fence which is four or five wire barbed fence with a mix of wood and steel posts. The fire also burned through 44 miles of interior barbed wire fence which is three or four wire barbed fence with mostly wood posts.

Damage to barbed wire fence was variable. In some locations where vegetation was heavy the fence is totally destroyed. Most of the wood posts were consumed in the fire and the wire was ruined by the heat. It is estimated that about 10 percent of the barbed wire fence is in this condition. The other 90 percent of the barbed wire fence was damaged and can be repaired. In these sections only a portion of the wood posts burned and only the bottom wire received enough heat to be destroyed. Barbed wire fences were also cut numerous times to allow passage of fire engines.

The fires also burned through 29 miles of one strand electric fence. Damage to this fence was variable depending on the vegetation and fire behavior. About 10 percent of the electric fence was nearly destroyed by the fire. All the plastic clips holding the fence were melted, any wood posts in the fence burned, and the wire ruined by the heat. The only usable items left are the steel fence posts. In the remaining 90 percent, the fence was damaged but can be repaired. Some clips are melted, some wood posts burned at gates and corners, but the wire is still useable. Electric fences were also cut in many locations and also hit by fire vehicles traveling at night. In some places the tangled wire will need to be replaced.

Barbed wire exclusion fences around some tree groves were completely destroyed. As the tree groves also burned it is recommended that the burned fence be removed and not replaced.

Ten plastic well casings on windmills were melted by the fire and need to be replaced (Attachment B).

C. Damage to Off-site Nonphysical Factors

In some locations wind driven sand may drift across the refuge boundary onto neighbors property. This may bury the boundary fence causing maintenance problems, cattle trespass, and loss of a very small amount of forage (Figure 4, Pony Fire).

D. Effects on Wildlife and Habitat

The fire burned grassland cover important for winter cover for a variety of wildlife species found on the refuge. Many grassland nesting birds also depend on residual vegetation from previous years for nesting cover in the spring. This cover will not be present in the spring of 2001 and will result in lower production of some species of birds on the refuge. Prairie chicken, sharp-tailed grouse, and waterfowl production will most likely be lower in 2001. Refuge grasslands are managed for these and other grassland birds. Effects should not be long term as grasslands will recover from the fire and only a portion of refuge grasslands burned.

Grasslands have evolved with fire and the long term effects of the fire should be neutral or positive for the refuge grasslands. If the area receives average or above average precipitation grasses will quickly regrow. If lower than average precipitation occurs it may take several years for the grasslands to recover to the height and density prior to the fires. Low rainfall and high winds will likely increase wind erosion and increase the amount of open sand in the hills. Many cedar trees that were invading refuge grasslands were burned.

III. Rehabilitation Needs and Objectives

A. Rehabilitation Alternatives

No Action. Under this alternative only the refuge boundary fence would be repaired. Interior fences would not be repaired or removed.

Repair and Replace Interior Fences. Under this alternative both refuge boundary and interior fences would be repaired or replaced. Labor would primarily be contracted. Some repair of the boundary fence would be completed by the Refuge staff or by funding the seasonal Fire Crew with 9262 funds to repair the areas of immediate concern. The areas of immediate concern need repair to prevent cattle trespass. This will help protect the Refuge lands and allow neighboring landowners to run their grazing programs in the winter.

B. Recommendations

The repair and replace interior fences alternative is recommended.

IV. Environmental Considerations

A. Impacts of Alternatives

No Action. Under this alternative only the refuge boundary fence would be repaired. Interior fences used for grassland management would not be repaired or removed. Without fence repair permitee cattle grazing would not take place in the fire areas. The refuge has used controlled grazing to manage grasslands for the benefit of habitats and wildlife. Grazing has been used to increase vigor of native grasses and reduce non-native grasses. The refuge has grazed burn areas in previous years and achieved good results with a combination of burning and grazing. If burn areas are not fenced and grazed, the amount of permitee grazing will need to be reduced or relocated to other areas on the refuge. The net affect of the no action alternative will be reduced amounts and quality of grassland habitats for wildlife on both the burned and unburned areas of the refuge.

Repair or Replace All Fences. Under this alternative both refuge boundary and interior fences would be repaired or replaced. Interior fences are needed to manage refuge grasslands for the benefit of wildlife. The refuge has successfully used cattle grazing, prescribed fire, and rest to manage habitats. Specifically, short duration grazing has been used to increase vigor and density of grasslands. Division fences are needed to implement short duration grazing. Spring grazing treatments have also been used to reduce exotic grasses and increase native grasses. This treatment also needs division fences to work effectively. In the past we have also grazed burned areas with good results in increasing grassland vigor. The net affect of this alternative would be a quick

return to quality grassland habitats for refuge wildlife. This could also be done without reducing permitee grazing or heavily impacting unburned areas of the refuge with cattle grazing.

B. Refuge Comprehensive Management Plan

The Valentine National Wildlife Refuge Comprehensive Conservation Plan was completed in 1999. The preferred fire rehabilitation plan would have a positive effect on meeting the goals and objectives set forth in the plan. The goal for habitat management is Preserve, restore, and enhance the indigenous flora of the physiographic region described as Sandhill Prairie.. The plan calls for using grazing, rest, and prescribed fire to meet objectives for specific range sites. Without repair of the interior fences the refuge will not be able to fully meet the goals set forth in the plan.

C. Compliance with Other Environmental Mandates

The Dads Lake Fire burned mainly in the proposed wilderness area. Use of mechanized equipment was used to put out the fire and will be needed to repair fences. In the refuge Comprehensive Conservation Plan it states that The use of some mechanized equipment will continue for the Service to be able to adequately manage the habitats and resources of the wilderness area.

No effects on archeological resources are anticipated from the rehab efforts. The fire does however provided an opportunity to conduct a survey of the fire areas while devoid of vegetation.

The fires burned in locations where the endangered blowout penstemon occurs and near to areas where the threatened western prairie fringed orchid grows. Healthy prairies should benefit the orchid. The penstemon grows in or near active blowouts. These blowout areas may increase in fire areas if the refuge receives low precipitation and high winds. Implementation of the rehab plan will likely not reduce existing blowouts but may prevent the formation of some new blowouts. The endangered American burying beetle is also found on the refuge. Restoration of the habitat and return of high small mammal and bird populations would benefit this species.

V. Summary of Anticipated Resource Needs and Costs

A. Description of Units

The acreage of the treatment areas are listed in attachment B. The areas being treated are Federal lands. The responsibility of repairing the boundary fence is incurred by the Refuge. The Dads fire has several miles of boundary fence and interior fence that need

repair. The Dads fire covers some of the most remote and roadless terrain on the Refuge. All of the units have choppy hills, dunes, marshes, lakes, and streams that make access difficult. The Figures display some of the terrain features that will present problems for the installation of the fence (Figures 2,3, &5). Some of the areas do not even have Jeep-trails for access, so the repair will be done on foot or with the use of ATV s. To date no claims have been filed from the Nebraska Game and Parks Commission or from private land owners, so no description of those lands is included.

B. Cost Per Unit

The cost per unit is not broken into each fire on the Valentine Fire Complex. The costs are based on the measurement of the boundary fence and interior fences affected by the burns. The costs are targeted at securing contract labor (Attachment C). Repair costs for the windmills are listed in the attachment and are not presented in a unit by unit basis. The costs of obtaining five seasonal firefighters for three pay periods is included and would offset some of the contracted labor costs and provide the added benefit of having a fire crew on hand to deal with any further fire activity. Utilizing the fire crew would not be feasible unless the time spent on Rehabilitation was totally funded out of 9262 funding and would not count against their 1040 hrs. These details would need to be approved at a later date, but the option is included in this planning phase (Attachment C).

C. Human Resource Requirements

Discussion: According to the USFWS Fire Ecologist at NIFC, Bill Leenhouts, rehabilitation measures for vegetation, fences, and structures, fall under different funding categories (personal correspondence, 10/5/00) depending on different criteria. Leenhouts works with Burned Area Emergency Rehabilitation (BAER) teams and issues. Fences and windmills are regarded as structures and would be repaired or replaced with Refuge dollars, 1261 dollars. However, fences that are needed to exclude cattle can be repaired or installed with rehabilitation dollars, 9262. Burned from unburned can be repaired for example and if the boundary fence has black on both sides of the fence, the fence can be repaired. The boundary fence can not be replaced, but a temporary exclusion fence can be put in its place. The location and criteria of the temporary fence would be at the discretion of the Refuge Manager. Interior allotments could have a new fence put in to separate burned from unburned.

The windmills are regarded as structures that would normally be repaired under 1261 dollars. If the windmills are regarded as critical to return the grasslands to a rehabilitated state, then they could be repaired under 9262 funds. This plan identifies limited grazing in the allotments as critical to rehabilitate the landscape to its former state. The windmills distribute the cattle in the allotments. Without the water, the cattle can not be put in the allotments to provide their rehabilitative component. The windmills are water

pumps and water sources needed for fire suppression. Generally, these structures are repaired with 1261 funds. The FMO views their replacement as being eligible for repair under 9261, wildfire, funding because they are a water pumping apparatus and identified as water sources on maps used by the fire crew. Approval for either funding source, 9262 or 9261 is requested to repair the windmills.

Currently, a bill is moving in Congress for approval on December 1, 2000. This bill would not differentiate between rehabilitation of the landscape and reconstruction of facilities. The bill would provide reimbursement methods for all damages from wildfires to be covered under on funding source. Leenhouts recommended that we submit inclusive information about the windmills and fences damaged because if the bill passes, retroactive provisions for funding damages may apply (personal correspondence, 10/05/00). This document will serve as a foundation to cover any elements that may not be funded in this plan. The BAER funds, 9262, for the fire are open for three years.

The number of persons used to complete the reconstruction of the fence will depend upon the number of bidders that are selected to complete the fence contract and the approval for funding to complete rehabilitation measures. Attachment C lists the costs estimate that include labor and materials on a per mile basis. More than one contractor may be selected and the contract specifications are not drafted for open bids at this time. The Refuge management staff would need a contact and contract representative to oversee the work and coordinate the contractors work priority areas. One to two refuge persons would oversee work progress. The number of persons needed also depends upon whether or not the interior pastures are funded for repair and replacement. Current guidelines indicate repair of the boundary fence can be completed with 9262 funds. The interior fences may or may not be funded by 9262 funds because they may be viewed as essential or nonessential for rehabilitation. The staff at the Fort Niobrara/Valentine NWRC view the repair of interior fences as essential because grazing inclusion and exclusion will be used in combination to restore the health and vigor of the grasslands.

The fire crew can provide some immediate repairs on the boundary fence that will exclude cattle from neighboring ranches during the winter grazing season. Several gates are wrecked and firefighters had to cut holes in the boundary fences to attack the fires. These items need to be repaired. Five seasonal firefighters are available to complete this work (Attachment C). It would be feasible to fund these employees out of 9262 funds and not have the time spent rehabilitating the fence count against their 1040 hrs. normally spent for suppression and prescribed fire duties. The employees need to be hired on an intermittent basis for fire severity conditions and prescribed fire. Currently, the proposed time of 3 pay periods for rehabilitation work would prevent the firefighters from being intermittently hired to do wildfire or prescribed fire work this fall, winter and next spring. The fire crew knows the work areas and has the equipment and knowledge to complete minor repairs that need to be done quickly. These employees would be supervised by the

FMO and coordinate project repairs through the recommendations of the Valentine National Wildlife Refuge manager. The crew would be on an intermittent status and laid off during periods of bad weather. If the fire crew completed repairs ahead of schedule, they would be released. The crew would be called to respond to any wildfires. Thirty percent of the Refuge grasslands burned. The CCP identifies 1,000 to 8,000 acres could be burned on the Refuge annually and not interfere with the management of the Refuge. Over 18,000 acres have burned and thirty percent of the grasslands burned. According to the national situation report, this fire complex was the largest wildland fire in the USFWS system this year. Historically, large fire events occur in this area February through April and September to October. Having a fire crew around would definitely help prevent any further impacts on the Refuge and potentially prevent any more large fire events. Each Valentine Complex fire on the Refuge cost an average of $40,000 to suppress. The proposed funding for the fire crew is less than $14,300.

D. Total Cost

The total cost for the rehabilitation of the fence, the windmills and the fire crew are outlined in Table 2, 2a. below. The costs are estimates that are needed to initiate implementation of this plan. The Refuge has lost a considerable amount of acreage and miles of fence. The Regional Director can approve this plan because the funding to implement it is below $250,000. The plan does not need to get sent to Boise or Washington D.C. for any further review because the costs are below $250,000.

Final Estimate Using Contract Labor

Item/Option	Fund Source	Totals
Fence	9262	$74,604.50
Windmill	9262 or 9261	$1,500.00
Totals	n.a.	**$76,104.50**

Table 2.

Final Estimate Using Fire Crew and Contract Labor

Item/Option	Fund Source	Totals
Fence	9262	$60,326.32
Windmill	9262 or 9261	$1,500.00
Firecrew	9262	$14,278.18
Totals	n.a.	**$76,104.50**

Table 2a.

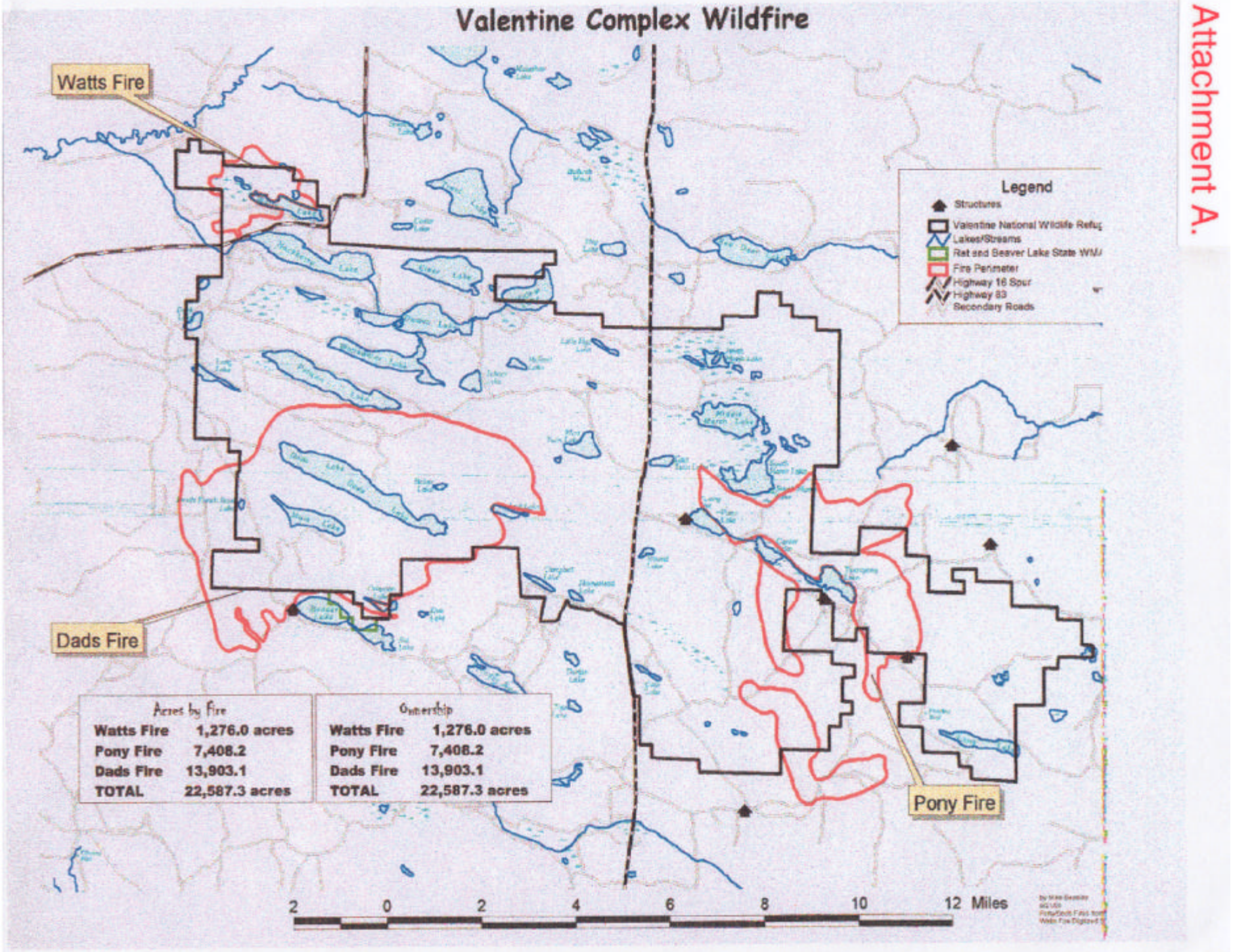
Review the attached aerial photos of some of the fires and it is apparent that rehabilitation measures are needed to restore the vigor of the grasslands in the Valentine National Wildlife Refuge. Details need to be researched to provide labor and funding. This plan is submitted at this time to meet deadline criteria for the submission of the Rehabilitation Plan. The following page is a signature sheet that approves the plan and notes who the reviewers of the document are. Sheets are also enclosed for comments. This plan needs to be implemented as soon as possible to support planning elements found in the CCP.

Valentine Rehabilitation Plan Signature Sheet

Recommended by Royce Huber, Complex Mgr. FNR/VNR	Date
Reviewed by Jim Kelton, RFMS	Date
Recommended by Phil Street, RFMC	Date
Reviewed by Larry Shanks, Refuge Program Supervisor	Date
Recommended by Ken McDermond, Regional Chief NWRS	Date
Approved by Ralph O. Morgenweck, Regional Director	Date

Attachment A.

Valentine Complex Wildfire



Acres by Fire	
Watts Fire	1,276.0 acres
Pony Fire	7,408.2
Dads Fire	13,903.1
TOTAL	22,587.3 acres

Ownership	
Watts Fire	1,276.0 acres
Pony Fire	7,408.2
Dads Fire	13,903.1
TOTAL	22,587.3 acres

Attachment B.

Fence Repair Cost Estimates Using Contractors

Mark Lindvall, Refuge Operations Specialist

Fence Type	Miles of Fence	Miles Damaged	Miles Destroyed	Repair Costs of Damaged	Repair Costs of Destroyed	Totals
Boundary	25.0	22.5	2.5	$6,750.00	$13,325.00	$20,075.00
Interior Barbed	44.0	39.6	4.4	$11,880.00	$23,408.00	$35,288.00
Interior Electric	29.0	26.1	2.9	$7,830.00	$11,411.50	$19241.50
Totals	98.0	88.2	9.8	$26,460.00	$48,144.50	$74,604.50

Windmill Repair Estimate

Mark Lindvall, Refuge Operations Specialist

Number of Windmills	Price to Repair	Total $
10	$150.00 each	$1,500.00

Note: Refer to discussion and tables on page 10. Fire crew costs are deducted from the total of the contract cost above.

Attachment C.

Seasonal Fire Crew Estimates

Tim Klukas, FMO FNR/VNR NWRC

Personnel/Equipment	Pay Periods Each	Total
2 GS-2-01	3	$4,117.68
1 GS-4-01	3	$2,250.66
2 GS-6-01	3	$6,309.84
2 Trucks, 2 ATV's	3	$1,600.00
Totals	3	$14,278.18

Note: Some materials on station (post, wires, clips) would be used to perform the minor repairs. Materials needed and replacement of on hand materials would be funded with 9262 funds.